Name: _____

# Algebra I Final Review Semester 1

***You may use a non-graphing calculator on any problem with an asterisk.**

Write an algebraic expression for each phrase.

1. The quotient of x and 13. _____

2. The product of m and 4. _____

3. The difference between 6 and a number. _____

4. Eight times the sum of m and 4. _____

5. The quotient of 3 times a number and 10 _____

6. The total amount of money that Bob earned mowing lawns is $5.00 times the number of hours that Bob worked. If m = the total money and h = the number of hours, write an equation to model this situation.

7. The total amount of money it costs to go to the movies is $8.50 times the number of people going to the movie. Write an equation to model this situation if c = total cost and n = the number of people going.

Simplify each expression.

8. $10 \div (3+2) + 9$

9. $|-15+5| + 4^2$

10. $(8+4) \div (4+2)$

11. $10 - 2^2 + \sqrt{4}$

12. $(3^2 + 4^2) \div 5$

13. $|-20+4| - 3^2$

Evaluate each expression if **a = 9**, **b = 6**, and **c = -5**.

14. $c^2 - ab$

15. $a(b-c)$

16. $a - b^2$

Order the numbers from least to greatest.

17. -5.1, 5.01, 5.001, 5.1

_____

18. $\frac{-3}{8}, \frac{-1}{2}, \frac{2}{3}, \frac{1}{5}$

_____

Evaluate each expression.

19. -4 + (-11) = _____

20. 5 + (-7) = _____

21. -3 + 8 = _____

22. -5 – 8 = _____

23. 4.1 – 6.3 = _____

24. -3 – (-7) = _____

25. -4 + 13 + (-6) = _____

26. -11 – (-6) – 7 = _____

27. -6 + (-3) - 4 = _____

28. 3.6 – 2.4 – (-6.1) = _____

29. (-6)(-7) = _____

30. (-5)(9) = _____

31. 18 ÷ (-2) = _____

32. -48 ÷ (-6) = _____

33. 6 – 3(9) = _____

34. 12 ÷ (-4) – 5 ÷ (-10) = _____

Simplify each expression.

35. 8 + 3w + 3 + w

36. 5x + 4y – 11x – 2y

37. 6 (y + 5)

38. 4 (2a – 6)

39. -5 (x + 3)

Simplify each expression. Show work!!

40. 7xy + 4 if x = -5 and y = -2

41. -6(4p – 2q) if p = -1.4 and q = 1.3

42. $b + c$ if b = $\frac{-1}{2}$ and c = $\frac{-2}{3}$

43. a - b if a = $1\frac{3}{5}$ and b = $4\frac{6}{7}$

Solve each equation. Show work for credit. Please circle your final answers.

44. $y - 6 = 8$

45. $n + 5 = -10$

46. $a - (-6) = 22$

47. $7x = 35$

48. $\frac{x}{10} = -2$

49. $\frac{2}{3}x = 8$

50. $\frac{7}{8}x = 4$

51. $6x + 8 = 32$

52. $0.2x - 0.1 = 1.1$

53. $-5 - 2x = 1$

54. $\frac{3}{5}x - 7 = 5$

55. $-6 + 5x = 8x - 9$

56. $8x + 6 = 3(4 - x)$

57. $-4(x - 3) - 30 = 6x$

58. $|x + 24| = 5$

59. $|x - 3| = 10$

Graph each inequality.

60. $x > 4$

61. $m \leq -3$

62. $2 > a$

Solve each inequality. Show work for credit. Please circle final answers.

63. $x + 5 > -4$

64. $\frac{m}{-9} \leq 2$

65. $5x + 3 > -22$

Solve each proportion. Show work for credit.

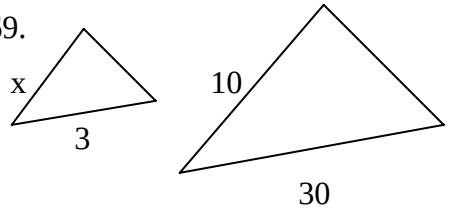
66. $\frac{x}{3} = \frac{12}{9}$

67. $\frac{15}{x} = \frac{10}{8}$

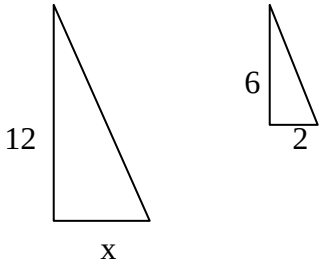
68. $\frac{24}{35} = \frac{9}{x+2}$

Each pair of shapes is similar. Find x on each.

69.




70.



Solve each problem below. Show some work.

*71. 36 is 8% of what number? *72. 11 is what percent of 46? *73. What is 68% of 15?

*74. What is the percent change from $4 to $11?

*75. What is the percent change from 35 seconds to 18 seconds?

*76. If is cost $6.00 for 2 pumpkins, how much would it cost for 1 pumpkin?

*77. If you can make $50.75 for working 7 hours, how much did you make per hour?

Convert each measurement.

*78. Convert $2mi$ to $ft$ (use $5280\ ft = 1\ mi$)

*79. Convert $\frac{10\ ft}{hr}$ to $\frac{in}{day}$ (use $12\ in = 1\ ft$ and $24\ hr = 1\ day$)

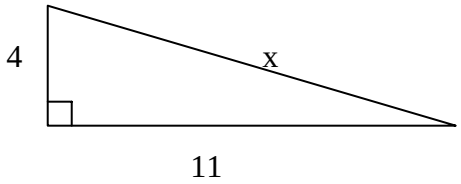
Solve each problem. Show work.

*80. Checking the temperature at your house several times throughout the day, you notice it goes up 5 degrees, down 12 degrees and up 3 degrees. If the temperature was 10 degrees above the final time you checked, what was the temperature the first time you checked the thermometer?

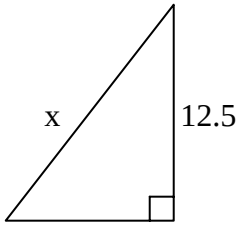
*81. You own a small airline that has aircraft that can carry 5 passengers and aircraft that can carry 3 passengers. A group of 42 tourists have contracted you to fly them out to Bethel, if you only have 7 5-passenger aircraft, how many 3-passenger aircraft will you need?

Use the Pythagorean theorem to solve for x on each triangle. Show work for full credit.

*82.

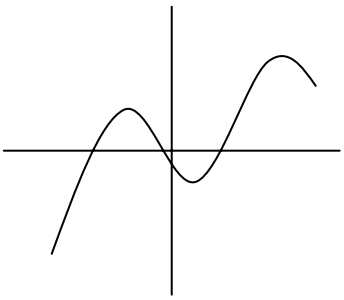



*83.



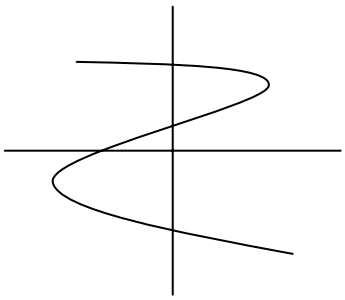

Determine whether each relation is a function. Circle Yes or No.

84.



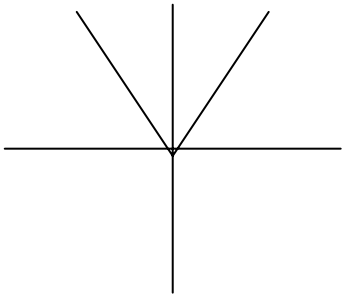
YES or NO

85.



YES or NO

86.



YES or NO

If $f(x) = 4 + 2x^3$ find each value. Show work for credit.

87. $f(3) =$

88. $f(2) =$

89. $f(-2) =$

Identify the slope and y-intercept of each equation.

90. $y = 3x - 1$

slope = _____

y-int. = _____

91. $-6 + \frac{2}{3}x = y$

slope = _____

y-int. = _____

92. $y = 5 - x$

slope = _____

y-int. = _____

Write an equation of the line using the given information.

93. (-2,3) and slope = -4

94. y-intercept = 3 and slope = $\frac{-3}{7}$

On #95 and #96, find

(a) the slope of the line passing through each pair of points, then

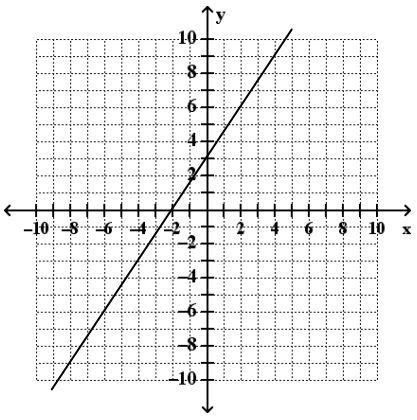
(b) find and equation of the line using that slope.

*95. (3,8) and (1,-2)

*96. (-2,5) and (-4,1)

Find the slope, y-intercept, and write and equation for each line.

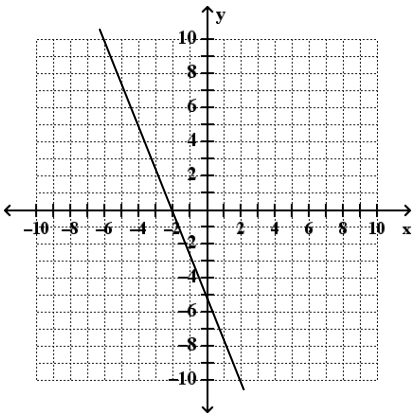
97.




slope = _____ y-int. = _____

equation: _____

98.

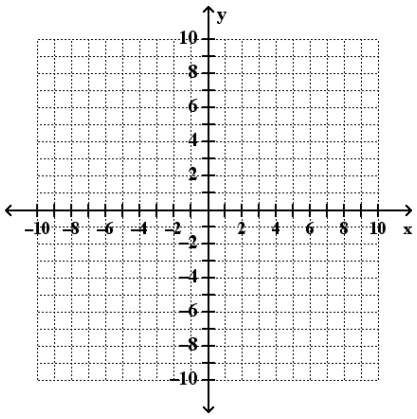



slope = _____ y-int. = _____

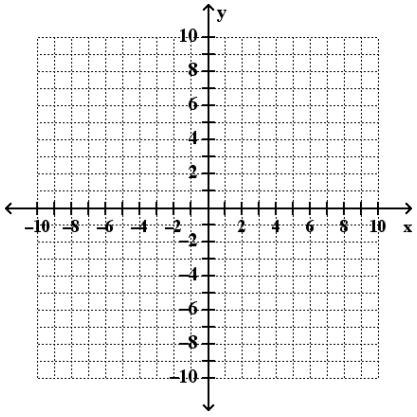
equation: _____

Graph each equation.

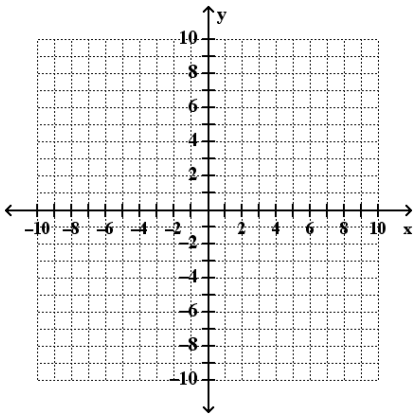
*99. $y = \frac{-1}{3}x + 2$



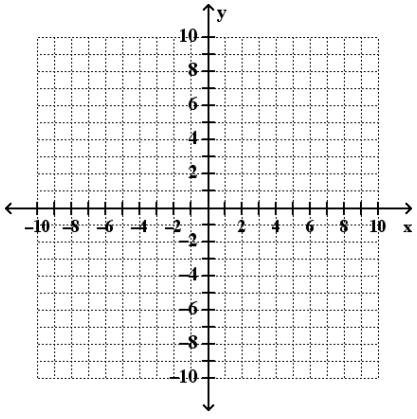

*100. $-3x + y = 6$




*101. $-2x = 5y - 15$




*102. $y = -2$



*103. Overnight, a huge blizzard dumped 10 ounces of snow on the ground. When the sun comes out, it melts the snow at a rate of about 1 inch per hour.

(a) What does x represent? _____

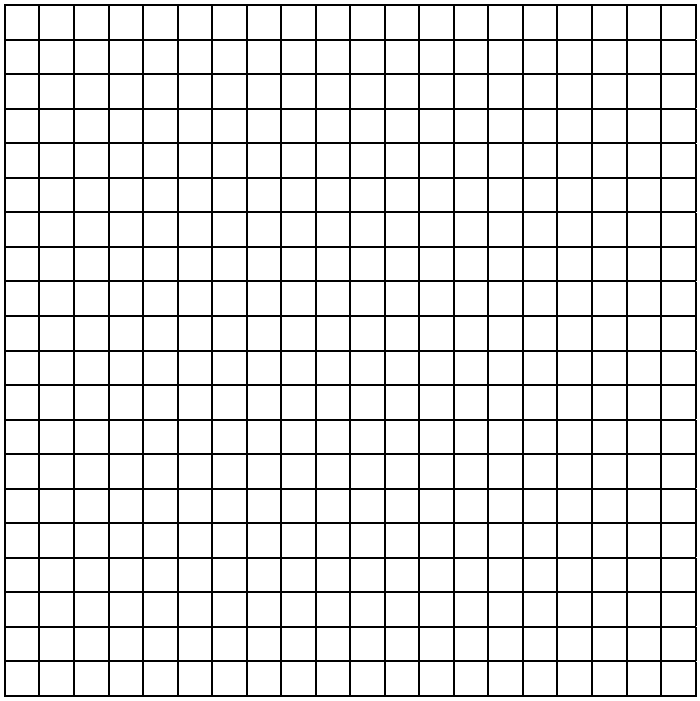
(b) What does y represent? _____

(c) Write an equation modeling the amount of snow left on the ground after the sun came out: _____

(e) Fill in the table of values for the situation above.

| x | y |
|---|---|
| 2 | |
| | 9 |
| 5 | |
| | 0 |
| 11 | |

(f) Use the table of values to graph the function. (worth 4 points)
* make sure to label and include units on axes!
* Graph only realistic values



(g) Find the x-intercept. x-intercept: _____

(h) What does the x-intercept represent in the story problem?

_____

_____

(i) Find the y-intercept. y-intercept: _____

(j) What does the y-intercept represent in the story problem?

_____

_____

(k) What is the slope of your equation? Slope = _____

(l) What does the slope represent in the story problem?

_____

_____

(m) State the Domain and Range of the function above. (For what interval of numbers does this function make sense?)

Domain: _____

Range: _____